



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

October 28, 2022

Mr. Bob Coffey  
Executive Vice President, Nuclear  
and Chief Nuclear Officer  
Florida Power & Light Company  
700 Universe Blvd.  
Mail Stop: EX/JB  
Juno Beach, FL 33408

SUBJECT: TURKEY POINT NUCLEAR GENERATING UNIT NO. 3 – REVIEW OF THE  
FALL 2021 STEAM GENERATOR TUBE INSPECTIONS DURING REFUELING  
OUTAGE NO. 32 (EPID L-2022-LRO-0070)

Dear Mr. Coffey:

By letter dated May 6, 2022, as supplemented by letter dated August 12, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML22126A104 and ML22227A023), Florida Power & Light Company (the licensee), submitted information to the U.S. Nuclear Regulatory Commission (NRC) summarizing the results of the fall 2021 steam generator (SG) tube inspections performed at the Turkey Point Nuclear Generating Unit No 3. The inspections were performed during refueling outage No. 32 (U3R32).

The NRC staff has completed its review of the submittal and concludes that the licensee provided the information required by Turkey Point Nuclear Generating Unit No. 3, Technical Specification 6.9.1.8, "Steam Generator Tube Inspection Report." In addition, the NRC staff concludes that there are no technical issues that warrant follow-up actions at this time. Enclosed is the NRC staff's review of the Turkey Point Nuclear Generating Unit No. 3 SG tube inspection report for U3R32.

B. Coffey

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If you have any questions, please contact me at 301-415-3867 or Michael.Mahoney@nrc.gov.

Sincerely,

*/RA/*

Michael Mahoney, Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-250

Enclosure:  
Review of the Steam Generator Tube  
Inspection Report

cc: Listserv

REVIEW OF THE FALL 2021 (U3R32) STEAM GENERATOR TUBE INSPECTION REPORT

FLORIDA POWER & LIGHT COMPANY

TURKEY POINT NUCLEAR GENERATING UNIT NO. 3

DOCKET NO. 50-250

By letter dated May 6, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22126A104) to the U.S. Nuclear Regulatory Commission (NRC), Florida Power & Light Company (the licensee) submitted information summarizing the results of the fall 2021 steam generator (SG) inspections performed at Turkey Point Nuclear Generating Unit No. 3 (Turkey Point 3). These inspections were performed during the Turkey Point 3 refueling outage (RFO) No. 32 (U3R32). The licensee provided additional information concerning the inspections in a letter dated August 12, 2022 (ML22227A023).

Turkey Point 3 has three replacement Westinghouse Model 44F SGs, which were installed in April 1982. Each SG contains 3,214 thermally treated Alloy 600 tubes (Alloy 600TT) with a nominal outside diameter of 0.875 inches and a nominal wall thickness of 0.050 inches. The tubes are hydraulically expanded at each end for the full depth of the tubesheet and are welded to the primary face of the tubesheet. The straight length of the tubes is supported by six stainless steel quatrefoil broached-hole tube support plates. Each SG has one stainless steel drilled-hole flow distribution baffle between the tubesheet secondary face and the bottom tube support plate. The U-bend regions of the tubes are supported by two sets of chrome-plated Alloy 600 V-shaped anti-vibration bars (AVBs). To reduce residual stress, the U-bend section of Rows 1-8 (short radius) was stress-relieved after bending.

The licensee provided the scope, extent, methods, and results of the SG tube inspections in the documents referenced above. In addition, the licensee described corrective actions (e.g., tube plugging), if any were taken in response to the inspection findings. Based on the review of the information provided, the NRC staff has the following observations:

- In SG-A, the licensee reported axial outside diameter stress corrosion cracking in the U-bend of row 1, column 13 (R1C13) close to the cold-leg bend tangent at the intrados of the tube. This was the first instance of cracking, other than tube end cracking (addressed with H-star (H\*)), in the Turkey Point 3 SGs. The NRC-approved H\* alternate repair criteria for Turkey Point 3 to allow tubes with crack-like indications to remain in service when the indications are more than 18.11 inches below the top of the tubesheet by License Amendment No. 254 in letter dated November 5, 2012 (ML12292A342).

The single axial indication was detected with +Point™ probe and confirmed with array and magnetically biased +Point™ probes. The axial length was 0.11 inches, and the maximum depth was 51 percent through-wall (TW). The licensee stated that tube R1C13 did not exhibit an indication like the manufacturing feature known as a “Blairsville bump” but the indication was coincident with a geometric signal like a ding. The U3R32 inspection scope in SG-A was expanded to include a +Point™ probe inspection of 50 percent of the tubes in the U-bend of row 3. A +Point™ probe inspection of the U-bend of all tubes in rows 1 and 2 was included in the scope of the base inspection. Tube R1C13 in SG-A was plugged during U3R32.

Enclosure

- The licensee reported a 23 percent TW freespan volumetric indication at 02H+3.15” in tube R18C87 in SG-B. In the letter dated August 12, 2022, the licensee stated that the indication is likely an imperfection on the outside diameter of the tube or could have been caused by a transient foreign object. A bobbin data lookback at the location of the indication showed a discernable signal in 2004 (earliest available digital data) and showed no significant change in the indication over time. Tube R18C87 was preventively pugged during U3R32.
- Three tubes in SG-C were plugged due to AVB wear during U3R32 – R33C43, R34C31, and R35C49. Tube R35C49 was plugged and stabilized due to wear indications exceeding the 40 percent TW plugging criterion in the plant technical specifications. In the letter dated August 12, 2022, the licensee stated it is unknown what may have caused the large AVB wear growth in Tube R35C49, but it could be due to uncertainties in sizing of repeat measurements. The licensee also stated it is unlikely to be caused by a foreign object because no possible loose part indications were in proximity to the wear indications. In addition, the licensee does not suspect deposit loading and thermal hydraulic behavior because an upper bundle flush was performed prior to eddy current testing of SG-C. It was stated in the letter dated May 6, 2022, that 71 pounds of sludge was removed from SG-C.

Tubes R33C43 and R34C31 were preventively plugged to provide additional margin until the next SG inspection. The licensee clarified in the letter dated August 12, 2022, that these tubes were preventively plugged due to having growth potential (AVB wear indications had grown since Turkey Point 3 RFO No. 27) instead of unusually high growth, which was stated in the letter dated May 6, 2022.

- The licensee stated that the previously noted scouring inside some of the J-tubes at the feeding interface do not appear to have changed.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by their technical specifications. In addition, the NRC staff concludes that there are no technical issues that warrant additional follow-up action at this time since the inspections appear to be consistent with the objective of detecting potential tube degradation and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units.

SUBJECT: TURKEY POINT NUCLEAR GENERATING UNIT NO. 3 – REVIEW OF THE FALL 2021 STEAM GENERATOR TUBE INSPECTIONS DURING REFUELING OUTAGE NO. 32 (EPID L-2022-LRO-0070) DATED OCTOBER 28, 2022

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**ADAMS Accession No.: ML22286A126**

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